REMARKS

Reconsideration and allowance are respectfully requested in light of the above amendments and the following remarks.

Claims 1-11 have been cancelled in favor of new claims 12-21, which better define the subject matter Applicant regards as the invention. Support for the features recited in the new claims is provided in the original claims. New claim 12 recites features of original claims 1 and 2, and claims 13-21 recite features of original claims 3-11, respectively. The amendments of claims 5-11, as now expressed by new claims 15-21, were not made due to a rule of patentability; therefore, no estoppel is deemed attachable thereto.

Claims 1-11 were rejected, under 35 USC §102(b), as being anticipated by Pearlstein et al. (US 5,568,200). To the extent these rejections are deemed applicable to new claims 12-21, Applicant respectfully traverses these rejections.

Claim 12 recites:

> *A coding apparatus of a time-varying image signal, the coding apparatus comprising:*
> *an intra-coding section that intra-codes information within a plurality of blocks that are formed by division of a picture within the time-varying image signal; and*
> *a coding controlling section that controls the intra-coding so that N>1 pictures of the time-varying image signal are successively intra-coded by the intra-coding section from the beginning of a communication, wherein:*

the picture quality of each intra-coded picture is represented by the corresponding intra-coded information, and

the coding controlling section encodes the N pictures such that the picture qualities of (N - 1) pictures, from the beginning of the communication, are more coarse than the picture quality of the Nth picture, from the beginning of the communication.

Pearlstein fails to disclose the features recited in claim 12 of: (1) a coding controlling section that controls the intra-coding of image data within a time-varying image signal so that N>1 pictures of the time-varying image signal are successively intra-coded by the intra-coding section from the beginning of a communication, wherein (2) the coding controlling section encodes the N pictures such that the picture qualities of (N - 1) pictures, from the beginning of the communication, are more coarse than the picture quality of the Nth picture, from the beginning of the communication.

In contrast to the above features of claim 12, Pearlstein does not disclose successively intra-coding two or more pictures. Instead, Pearlstein discloses that only a portion of each successive frame is intra-coded and the remaining information of the frame is motion compensation encoded. So, for example, if an entirely different twenty percent of each successive frame communicated by Pearlstein's system is intra-coded, then five successive frames must be communicated to convey an entire frame of

intra-coded information. And since Pearlstein does not disclose successively intra-coding two or more picture frames, it necessarily follows that Pearlstein cannot disclose communicating N - 1 successive intra-coded pictures whose picture qualities are coarser than that of the Nth successively communicated intra-coded picture. The distinctions between the above noted features of claim 12 and that disclosed by Pearlstein are described in greater detail below.

Pearlstein discloses in Fig. 2 that sampled video signal data is transmitted to an inter/intra formatting circuit 14 (Pearlstein col. 6, lines 43-44). The inter/intra formatting circuit 14 selects which group of macroblocks will be intra-coded and which will be inter-coded in the next video frame (col. 6, lines 44-46). For example, the first row of macroblocks may be intra-coded in the first frame, and the second row of macroblocks may be intra-coded in the second frame (col. 6, lines 46-49). In this manner, a complete reference frame can be created after a certain number of frames are encoded (col. 6, lines 49-51). Typically, every macroblock position is intra-coded at least once over some period of time (col. 6, lines 51-52).

The above portion of Pearlstein's disclosure makes clear that no two successive frames of the communicated image data have all of their respective macroblocks intra-coded. As a result, Pearlstein

does not disclose the feature recited in claim 12 of intra-coding image data within a time-varying image signal so that N>1 pictures of the time-varying image signal are successively intra-coded.

Regarding the claimed feature of communicating N - 1 successive intra-coded pictures whose picture qualities are coarser than that of the Nth successively communicated intra-coded picture, Pearlstein discloses nothing similar to this feature. The Office Action proposes that Pearlstein discloses this feature in column 7, lines 1-10 (see Office Action page 3, lines 1-2). By contrast to the claimed feature, though, Pearlstein discloses the following in the cited portion.

A DCT circuit 16 converts received video data into spatial frequency coefficients (Pearlstein col. 6, line 67, through col. 7, line 2). The spatial frequency data is then processed by a quantization circuit 18, where quantization intervals are identified by an index for subsequent decoding (col. 7, lines 2-4). The quantization intervals are chosen such that the human visual system is unlikely to perceive the inaccuracy of the particular spatial frequency after subsequent reconstruction of the picture data (col. 7, lines 4-8). Next, the quantized data is communicated to a variable length encoding circuit 20 where variable length encoding, as known to those skilled in the art, is performed to achieve further video compression (col. 7, lines 8-11).

As may be determined from the above portion of Pearlstein's disclosure, Pearlstein does not disclose making "picture qualities of (N-1) [pictures] rough and the Nth picture fine," as proposed in the Office Action (Office Action page 3, lines 1-2). Pearlstein's quantization circuit 18 employs fixed, not variable, quantization intervals and each interval is identified by an index for subsequent decoding. For example, an index value of 1 might identify the quantization interval for amplitude values in the range of $x <= x_1$, an index value of 2 might identify the quantization interval for amplitude values in the range of $x_1 < x <= x_2$, and an index value of 3 might identify the quantization interval for amplitude values in the range of $x_2 < x <= x_3$, where x_1, x_2, and x_3 have fixed values for all time.

In an exemplary, but non limiting, embodiment of the invention described on pages 15 and 16 of the present specification, a variable quantizer uses a quantization parameter of 31 for the first two successively intra-coded pictures and a quantization parameter of 8 for the third intra-coded picture of the three picture sequence. For this example, 6,400 coded bits are used to coarsely represent each of the first two pictures and 16,000 coded bits are used to finely represent the third picture. Pearlstein discloses nothing similar to this.

Moreover, the features of claim 12 provide benefits that are unobtainable with Pearlstein's device. For example, the present invention does not simply transmit N intra-pictures to reduce decoding errors of intra-pictures. Where N intra-pictures are provided, the last, Nth, picture serves as a standard for decoding subsequent pictures. Therefore, the picture quality of the Nth picture is made fine so that improved coding rates may be achieved for the transmission of the subsequent inter-picture information. As for the N-1 pictures preceding the Nth picture, these pictures may be used for concealing quality deterioration in the Nth intra-picture due to a transmission error. Moreover, given coarser picture qualities and, therefore, requiring less coded data, these N-1 pictures make possible a shorter transmission time. Such advantages of the present invention are described in detail in the specification on page 10, line 11, through page 20, line 15, and page 18, line 17, through page 19, line 17.

Thus, when N intra-pictures are coded and transmitted, the use of the coding apparatus and coding method of time-varying image signals of the present invention makes it possible to reduce the amount of code needed to transmit and perform error concealment processing of the Nth picture, using the N-1 intra-pictures, which are less likely to contain errors. This feature of the present

invention provides the advantage of decoding moving pictures at a high quality level.

In accordance with the above discussion, Applicant submits that Pearlstein does not anticipate the above-noted features of claim 12. Specifically, Pearlstein does not disclose the claimed features of: (1) a coding controlling section that controls the intra-coding of image data within a time-varying image signal so that N>1 pictures of the time-varying image signal are successively intra-coded by the intra-coding section from the beginning of a communication wherein (2) the coding controlling section encodes the N pictures such that the picture qualities of (N - 1) pictures, from the beginning of the communication, are more coarse than the picture quality of the Nth picture, from the beginning of the communication. Therefore, allowance of claim 12 is warranted.

Claims 13, 14, and 19 each recite the above-noted features distinguishing apparatus claim 12 from Pearlstein, though claim 19 does so with respect to a method. For similar reasons these features distinguish claim 12 from Pearlstein, so too do they distinguish claims 13, 14, and 19. Therefore, allowance of claims 13, 14, and 19 is warranted.

Claim 15 recites:

> *A decoding apparatus of a time-varying image signal, the decoding apparatus comprising:*

a decoding section that decodes image-coded data within the time-varying image signal;

a memorizing section that memorizes position information, within the time-varying image signal, of an intra-coded block of the image-coded data that cannot correctly be decoded by the decoding section due to a transmission error; and

a requesting section that:

determines whether the memorizing section contains position information for any one of a plurality of successive intra-coded blocks that immediately precede a motion compensation encoded block within the time-varying signal, and

transmits a request for a communication partner to communicate, in the time-varying image signal, a picture whose image data is intra-coded when the position information is determined to exist.

Pearlstein fails to disclose the feature recited in claim 15 of transmitting a request for a communication partner to communicate, in a time-varying image signal, a picture whose image data is intra-coded, when position information of an intra-coded block of received image-coded data that cannot correctly be decoded is determined to exist. The Office Action proposes that this feature, as recited originally in claim 5, is disclosed by Pearlstein in column 8, lines 49-55 (see Office Action page 4, lines 7-9). By contrast to the claimed feature, though, Pearlstein disclose the following in the cited portion.

A refresh control processor 29, based on received refresh descriptor data, provides control signals to a display controller 32 to inhibit frame display until an adequate amount of prediction

references based on the intracoded data of previous frames is developed (Pearlstein col. 8, lines 48-51). In one embodiment, frame display is inhibited until all regions of the frame can be reconstructed from valid prediction references based on intracoded data (col. 8, lines 51-54). In another embodiment, frame display is inhibited until any suitable number of regions are reconstructed as such, with the remaining regions being displayed after error concealment techniques are applied (col. 8, lines 54-58).

As may be determined by examination of the cited portion of Pearlstein, Pearlstein does not disclose transmitting a request for a communication partner to communicate a picture whose image data is intra-coded. Moreover, Pearlstein does not disclose sending such a request in response to detecting an intra-coded block of image-coded data that cannot correctly be decoded.

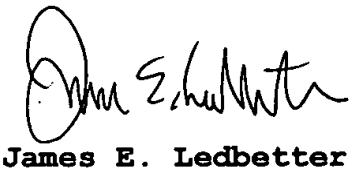
In accordance with the above discussion, Applicant submits that Pearlstein does not anticipate the feature recited in claim 15 of transmitting a request for a communication partner to communicate, in a time-varying image signal, a picture whose image data is intra-coded, when position information of an intra-coded block of received image-coded data that cannot correctly be decoded is determined to exist. Therefore, allowance of claim 15 and all claims dependent therefrom is warranted.

Claims 17, 18, and 20 each recite the features distinguishing apparatus claim 15 from Pearlstein, though claim 20 does so with respect to a method. For similar reasons these features distinguish claim 15 from Pearlstein, so too do they distinguish claims 17, 18, and 20. Therefore, allowance of claims 17, 18, and 20 and all claims dependent therefrom is warranted.

In view of the above, it is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,



Date: July 28, 2004
JEL/DWW/att

James E. Ledbetter
Registration No. 28,732

Attorney Docket No. L9289.01121
STEVENS DAVIS, MILLER & MOSHER, L.L.P.
1615 L Street, N.W., Suite 850
P.O. Box 34387
Washington, D.C. 20043-4387
Telephone: (202) 785-0100
Facsimile: (202) 408-5200